What is claimed is:

1. A bi-directional communication link having plural channels, each of said channels comprising:

a master connected at a near of the channel and a slave connected at an opposite end of the channel;

said master comprising:

(a) a transmitter coupled to the channel and having a master Tx clock signal;

(b) a receiver coupled to the channel and comprising:

(i) an analog-to-digital converter that periodically samples at a sampling time Ts;

(ii) a clock recovery circuit that generates a master Rx clock from a clock signal embedded in a signal received from the channel;

(iii) a metric processor connected to an output of said analog-to-digital converter that produces a metric signal indicative of resolution of the received signal;

said slave comprising:

(a) a receiver coupled to the channel and comprising a clock recovery circuit for generating a Slave Rx clock from the signal received from the master;

(b) a transmitter coupled to the channel and having a Slave Tx clock signal, whereby said master Rx clock signal is frequency locked to said Slave Tx clock signal;

(c) a controllable delay element for generating said Slave Tx clock signal from said Slave Rx clock signal;

said communication link further comprising a decision processor responsive to said metric processor for changing a delay value of said controllable delay element so as to maximize the metric signal.

2. The apparatus of claim 1 wherein said resolution is a resolution between leading and trailing edges of the received signal.

3. The apparatus of claim 1 wherein said resolution is a resolution between allowed amplitude levels of the received signal.

4. The apparatus of claim 1 further comprising a second controllable delay between said Master Rx clock signal and said analog-to-digital converter and responsive to said decision processor, whereby said decision processor delays the Slave Tx clock signal and the sample time Ts independently to maximize the metric signal.

5. A bi-directional communication link having plural channels with respective masters and slaves at respective ends of respective channels, each master issuing a Master Tx clock, each slave constructing a Slave Rx clock frequency-locked to the Master Tx clock, and a Slave Tx clock frequency-locked to the Slave Rx clock, said bi-directional communication link comprising:

a metric processor for each master that produces a metric signal indicative of resolution of a signal received by the master from the corresponding slave; and

a decision processor responsive to said metric processor for changing the phase of the Slave Tx clock relative to the Slave Rx clock so as to maximize the metric signal.

6. The apparatus of claim 5 wherein said resolution is a resolution between leading and trailing edges of the received signal.

7. The apparatus of claim 5 wherein said resolution is a resolution between allowed amplitude levels of the received signal.

8. A bi-directional communication link having plural channels with respective masters and slaves at respective ends of respective channels, each master issuing a Master Tx clock, each slave constructing a Slave Rx clock frequency-locked to the Master Tx clock, and a Slave Tx clock frequency-locked to the Slave Rx clock, wherein the master samples a signal it receives from the slave at a sample time Ts frequency locked to the Master Rx clock, said bi-directional communication link comprising:

a metric processor for each master that produces a metric signal indicative of resolution of a signal received by the master from the corresponding slave; and

a decision processor responsive to said metric processor for shifting said sample time Ts relative to the Master Tx clock so as to maximize the metric signal.

9. The apparatus of claim 8 wherein said resolution is a resolution between leading and trailing edges of the received signal.

10. The apparatus of claim 8 wherein said resolution is a resolution between allowed amplitude levels of the received signal.

11. A bi-directional communication link having plural channels with respective masters and slaves at respective ends of respective channels, each master issuing a Master Tx clock, each slave constructing a Slave Rx clock frequency-locked to the Master Tx clock, and a Slave Tx clock frequency-locked to the Slave Rx clock, wherein each master receives a periodic noise burst comprising cross-talk from

masters of adjacent channels and echoes of itself, said noise capable of reducing the resolution of a signal received by the master from the slave over the corresponding communication, said bi-directional communication link comprising:

a metric processor for each master that produces a metric signal indicative of the resolution of the signal received by the master from the corresponding slave; and

a decision processor responsive to said metric processor for changing the phase of the Slave Tx clock relative to the Slave Rx clock so as to reduce the effects of the noise burst on the received signal and thereby increase the metric signal.

12. The apparatus of claim 11 wherein said resolution is a resolution between leading and trailing edges of the received signal.

13. The apparatus of claim 11 wherein said resolution is a resolution between allowed amplitude levels of the received signal.

14. A bi-directional communication link having plural channels with respective masters and slaves at respective ends of respective channels, each master issuing a Master Tx clock, each slave constructing a Slave Rx clock frequency-locked to the Master Tx clock, and a Slave Tx clock frequency-locked to the Slave Rx clock, wherein the master samples a signal it receives from the slave at a sample time Ts frequency locked to the Master Rx clock, and wherein each master receives a periodic noise burst comprising cross-talk from masters of adjacent channels and echoes of itself, said noise capable of reducing the resolution of a signal received by the master from the slave over the corresponding

communication, said bi-directional communication link comprising:

a metric processor for each master that produces a metric signal indicative of the resolution of the signal received by the master from the corresponding slave; and

a decision processor responsive to said metric processor for shifting said sample time Ts relative to the Master Tx clock so as to reduce the effects of the noise burst on the received signal and thereby increase the metric signal.

15. The apparatus of claim 14 wherein said resolution is a resolution between leading and trailing edges of the received signal.

16. The apparatus of claim 14 wherein said resolution is a resolution between allowed amplitude levels of the received signal.

17. The apparatus of claim 14 further comprising a controllable delay between said Slave Rx clock and said Slave Tx clock, said decision processor governing said controllable delay so as the shift said sample time Ts.

18. The apparatus of claim 15 wherein said metric processor comprises a processor for computing an opening in an eye diagram of the signal received by the master.

19. The apparatus of claim 16 wherein said metric processor comprises a processor for computing the proportion of samples of the signal received by the master falling within allowed amplitude levels relative to those that fall outside of allowed amplitude levels.

20. In a bi-directional communication link having plural channels with respective masters and slaves at respective ends of respective channels, each master issuing a Master Tx clock, each slave constructing a Slave Rx clock frequency-locked to the Master Tx clock, and a Slave Tx clock frequency-locked to the Slave Rx clock, wherein the master samples a signal it receives from the slave at a sample time Ts frequency locked to the Master Rx clock, and wherein each master receives a periodic noise burst comprising cross-talk from masters of adjacent channels and echoes of itself, said noise capable of reducing the resolution of a signal received by the master from the slave over the corresponding communication, a method of reducing the effects of the cross-talk and echo noise burst on the signal received by each master, comprising:

for each master, producing a metric signal indicative of the resolution of the signal received by the master from the corresponding slave; and

in response to said metric signal, shifting said sample time Ts relative to the Master Tx clock so as to reduce the effects of the noise burst on the received signal and thereby increase the metric signal.

21. The method of claim 20 wherein said resolution is a resolution between leading and trailing edges of the received signal.

22. The method of claim 20 wherein said resolution is a resolution between allowed amplitude levels of the received signal.

23. The method claim 20 wherein the shifting of said sample time Ts is carried out by changing a delay between said Slave Rx clock and said Slave Tx clock.

24. The method of claim 21 wherein the producing of the metric signal comprises computing an opening size in an eye diagram of the signal received by the master.

25. The method of claim 22 wherein the producing of the metric signal comprises computing the proportion of samples of the signal received by the master falling within allowed amplitude levels relative to those that fall outside of allowed amplitude levels.

26. In a bi-directional communication link having plural channels with respective masters and slaves at respective ends of respective channels, each master issuing a Master Tx clock, each slave constructing a Slave Rx clock frequency-locked to the Master Tx clock, and a Slave Tx clock frequency-locked to the Slave Rx clock, wherein the master samples a signal it receives from the slave at a sample time Ts frequency locked to the Master Rx clock, and wherein each master receives a periodic noise burst comprising cross-talk from masters of adjacent channels and echoes of itself, said noise capable of reducing the resolution of a signal received by the master from the slave over the corresponding communication, a method of reducing the effects of the cross-talk and echo noise burst on the signal received by each master, comprising:

for each master, producing a metric signal indicative of the resolution of the signal received by the master from the corresponding slave;

for each slave, producing a metric signal indicative of the resolution of the signal received by the slave from the corresponding master; and

in response to the metric signal corresponding to the master and to the metric signal corresponding to the slave, shifting said sample time Ts relative to the Master Tx clock so as to reduce the effects of the noise

burst on the received signal at both the master and the slave and thereby increase the metric signals corresponding to the master and the slave.